



OLYMPIC COAST NATIONAL MARINE SANCTUARY

A Report for Sanctuary Advisory Council Members Reporting Period: APR 27– JUL 5, 2019

**OFFICE REPORT
OLYMPIC COAST NATIONAL MARINE
SANCTUARY NEWS AND PROGRAM UPDATES**

Organized by Olympic Coast National Marine Sanctuary
(OCNMS) management priorities

ABOUT THE SANCTUARY

Olympic Coast National Marine Sanctuary spans 3,188 square miles of marine waters off the rugged Olympic Peninsula coastline. The sanctuary extends 25 to 50 miles seaward, covering much of the continental shelf and several major submarine canyons.

The sanctuary protects a productive upwelling zone home to numerous marine mammal and seabird species, diverse populations of kelp and intertidal algae, and thriving invertebrate communities. The sanctuary is also rich in cultural resources, with over 150 documented historical shipwrecks and the vibrant contemporary cultures of the Makah, Quileute, and Hoh Indian Tribes and the Quinault Nation.

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TREATY TRUST RESPONSIBILITIES

Olympic Coast Intergovernmental Policy Council meets on Makah Reservation

The Olympic Coast Intergovernmental Policy Council, composed of the Makah, Quileute, Hoh tribes, and Quinault Indian Nation, state of Washington, and NOAA’s Olympic Coast National Marine Sanctuary (OCNMS) met May 22nd in Neah Bay. The group heard presentations from OCNMS staff on key research initiatives, discussed how to work together on future science collaborations, and discussed options for funding tribal participation in IPC as well as annual work priorities.

COLLABORATIVE AND COORDINATED MANAGEMENT

Washington Sub-Regional: Intergovernmental Ocean Policy coordination team meets

The state of Washington, coastal treaty tribes (Makah, Quileute, Quinault, and Hoh), and federal agencies including NOAA, were hosted by the Makah Tribe in a meeting to discuss the West Coast Ocean Data Portal: Coordinator Framework, to hear a presentation from the Bureau of Ocean Energy Management (BOEM) on their federal authority and role, and to discuss work underway through this assembly. Carol Bernthal, sanctuary superintendent, represented NOAA at the meeting at the invitation of the group.

Olympic Coast National Marine Sanctuary holds annual coordination meeting with U.S. Navy partners

On June 11, Olympic Coast National Marine Sanctuary staff met with U.S. Navy partners to coordinate activities and share information about the Navy's current Draft Environmental Impact Statement along with the various planned research and monitoring activities that will be undertaken or funded by each organization. Though not a formal consultation, regular annual coordination meetings between the partners help build relationships and support good communication channels, which are especially critical since the sanctuary lies entirely within the Navy's Northwest Testing and Training Range and overlaps the Quinault Range Site. While the potential for impacts from Navy testing and training activities is high, both organizations are committed to reducing and mitigating potential impacts to living resources within the sanctuary without compromising the military's ability to test new technology and train troops.

Ocean Acidification: Tracking an Emerging Threat on the Olympic Coast presented at Clallam County

Board of Clallam County Commissioners is hosting a series of events intended to highlight the impacts of climate change on industries and communities throughout the county. As part of the series, Kevin Grant, deputy superintendent at Olympic Coast National Marine Sanctuary presented "Ocean Acidification: Tracking an Emerging Threat on the Olympic Coast," in Port Angeles, Washington. The presentation was open to the public and audience members included to county commissioners, members of Sequim and Port Angeles, Washington city councils, and other interested members of the public. The presentation took a look at how a sentinel site model provides a collaborative, holistic approach to resource management where sound science is integral to education, outreach, management, and public engagement campaigns to address ocean acidification on Washington state's outer coast.

Olympic Coast National Marine Sanctuary updates Washington Coast Marine Advisory Council (WCMAC) on sanctuary condition report effort to develop ecosystem indicators

Olympic Coast National Marine Sanctuary (OCNMS) research coordinator gave a presentation to members of the WCMAC to update them on ecological indicators being developed as part of the sanctuary condition report, and the results of an associated workshop held in May. OCNMS occupies about 42 percent of the area included in Washington state's new Marine Spatial Plan (MSP), which was released just last year. OCNMS' condition report will address all of the major coastal habitat types included in the MSP except for estuaries, so there is considerable opportunity for and interest in continued partnership. Thanks to ongoing collaborations among staff from OCNMS, the National Centers for Coastal Ocean Science, the California Current Integrated Ecosystem Assessment team, Washington state agencies, and the Coastal Treaty Tribes, the next OCNMS condition report is expected to generate benefits that extend well beyond the boundaries of the sanctuary.

Seattle National Public Radio Affiliate KUOW reports on ocean dumping in Olympic Coast National Marine Sanctuary

<https://www.kuow.org/stories/sedan-overboard-how-the-bottom-of-the-Pacific-got-littered-with-junk-cars>

The West Coast Regional Office and Olympic Coast National Marine Sanctuary contributed to a story on the loss from marine shipping of a number of crushed cars in the sanctuary. The story, "Sedan overboard! How the bottom of the Pacific got littered with junk cars," was broadcast on June 19, 2019. The story describes how crushed cars were lost from an open deck barge being towed from near Vancouver, British Columbia to Portland, Oregon, as part of the scrap metal trade. The sanctuary became aware of the situation in 2013 and investigated the circumstances of the situation and eventually working with the U.S. Coast Guard to take action to prevent future losses.

CONDUCT COLLABORATIVE RESEARCH, ASSESSMENTS, AND MONITORING TO INFORM ECOSYSTEM-BASED MANAGEMENT

Washington Sea Grant fellow presents on ocean acidification sentinel site at International Global Ocean Acidification Observing Network Science Workshop



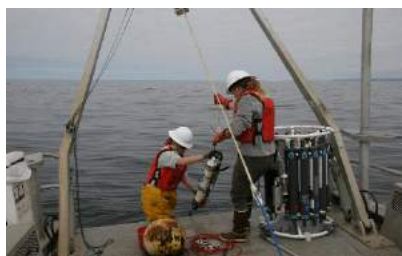
In a session on “Shaping the Global Ocean Acidification Observing Network (GOA-ON) to better meet the information needs of global-to-local decision makers,” marine policy fellow Julie Ann Koehlinger gave a talk about the ongoing efforts to establish an ocean acidification (OA) sentinel site in Olympic Coast National Marine Sanctuary. The OA sentinel site working group is hard at work defining the vision, goals, and objectives for the sentinel site in anticipation of forming a steering committee to coordinate activities and distribute results.

OCNMS hosts condition report workshop on ecological indicators

On May 2, a select group of regional scientists were invited to attend a workshop and provide input on a suite of ecological indicators proposed for use in the upcoming sanctuary condition report. The workshop featured presentations from key collaborators at NOAA’s National Centers for Coastal Ocean Science and NOAA’s Integrated Ecosystem Assessment Program prior to plenary and break-out group discussions organized around the six habitat types that will be assessed during the two-year effort. Workshop participants generously offered suggestions and advice while identifying relevant potential data sets and discussing the various environmental and biological indicators that best describe conditions present on the Olympic Coast since 2008. Results from this workshop will guide preparations for a broader 3-day expert workshop. The workshop will identify status and trend determinations plus ecosystem service evaluations will be made based on available time-series data as well as traditional knowledge contributed by the four Coastal Treaty Tribes whom have inhabited this area for at least 10,000 years.

Our 20th season: Olympic Coast National Marine Sanctuary research team deploys coastal moorings to monitor changing ocean conditions on Washington’s Olympic Coast

The Olympic Coast National Marine Sanctuary (OCNMS) research team, composed of R/V *Tatoosh* vessel captain LTJG Alisha Friel, mooring technician Kathy Hough, and research coordinator Jenny



Waddell, departed Port Angeles on an early morning during late May to transit to the outer coast. Their goal was to begin deploying an array of 10 coastal moorings that has been documenting ocean chemistry in nearshore waters for the past 20 years. Mooring data has been collected consistently over time to target the highly productive upwelling season, which generally occurs between April and October. Data are used by a variety of collaborators and features prominently in regional ocean forecast models, such as the LiveOcean model

(<https://faculty.washington.edu/pmacc/LO/LiveOcean.html>) and J-SCOPE (<http://www.nanoos.org/products/j-scope/forecasts.php>).

OCNMS data has documented several major ecosystem perturbations, including the recent marine heat wave (known locally as “the blob”) and 2017’s widespread and prolonged hypoxia event. Moorings continue to be serviced every 5-6 weeks throughout the upwelling season and will be recovered in late September. Once recovered,

seasonal mooring data is checked and validated, then provided to the public at:

https://olympiccoast.noaa.gov/science/oceanography/oceanographic_moorings/oceanographic_moorings.html.

Hunting meteorites on the seafloor of Olympic Coast National Marine Sanctuary with NASA and Schmidt Ocean Institute (SOI)

<https://schmidtocean.org/cruise/seeking-space-rocks/>

From June 3-7, 2019, Olympic Coast National Marine Sanctuary research coordinator participated in a fascinating research expedition on the R/V *Falkor*.

Participants attempted to recover meteorite fragments that were scattered across the seafloor in March 2018, when a massive meteorite streaked across the sky and splashed down into the sanctuary. Buoyed by the discovery of a tiny meteorite fragment during last summer's one-day seafloor search with Ocean Exploration Trust, NASA cosmic dust curator, Dr. Marc Fries, assembled a prestigious team of space scientists and meteorite experts to further explore and collect



samples from the debris field. Centered about 12 miles west of Taholah, Washington near the rim of Quinault Canyon, researchers used scoops, slurps, and new sampling tools designed and fabricated by SOI engineers. Scientists and remotely operated vehicle (ROV) pilots worked around the clock in 12-hour shifts to separate rock samples from the muddy silt and sand that dominates the seafloor in this area

while leaving behind organisms living there. During the week, scientists held a ship-to-shore event allowing scientists to interact with middle and high school students from the Quinault Indian Nation, the tribal community located closest to the meteorite fall. Recovered samples are being analyzed by NASA to determine whether sufficient meteorite material was recovered to enable further analysis and warrant an official record in the database of the Meteoritical Society.



Figure 1. Through the Schmidt Ocean Institute's artist-at-sea program, Abrian Curington created original artwork to document the 'seeking space rocks' expedition. (Credit: Abrian Curington, www.bluecatco.com)

OCNMS joins annual census of Washington sea otters

Olympic Coast National Marine Sanctuary (OCNMS) research coordinator joined a team from the Washington Department of Fish and Wildlife to observe the annual census of sea otters along the state's Pacific coast and train to become a future observer in these U.S. Fish and Wildlife (USFWS) sponsored surveys. In concert with a land-based survey team, three aerial surveys conducted along the entire shoreline of the sanctuary from a small plane yielded visual estimates and photographs that will be

analyzed and compared over the coming months to determine the population size and distribution of animals along the coast. Sea otters were extirpated from Washington in the early 1900s, but about 70 animals were reintroduced from Alaska in 1969-1970; since then, the population increased to number approximately 2,058 by 2017. Although sea otters are managed under the authority of USFWS, nearly the entire population of Washington's sea otters live within sanctuary boundaries. As apex predators and keystone species in the ecosystem, sea otters serve a critical role in maintaining the health of kelp forests and other important sanctuary habitats.



IMPROVE OCEAN LITERACY

Olympic Coast participates in national education and communications meeting

Joining educators and communicators from all 13 sanctuaries and 2 marine monuments within the Office of National Marine Sanctuaries, Olympic Coast staff attended the week long meeting hosted by Monitor National Marine Sanctuary (MNMS) in Newport News, Virginia, April 29 - May 3. Diving into our nation's maritime history with the story of *Monitor* and the battle of the Atlantic, MNMS kicked off the joint meeting in style. Taking advantage of the time together, the meeting was packed with topics ranging from social media platforms, talking points around sentinel site topics, Best Practices, roll-out plans, virtual reality, unconscious bias in environmental education, distance learning, infographics, and Get into Your Sanctuary. Sense of place, a key part of sanctuaries, was established through field trips to the Nauticus Museum in Norfolk, a driving tour of historic places relating to the USS Monitor, World War I and World War II, as well as a tour by MNMS staff through the Mariners' Museum. The meeting provided an opportunity to strengthen relationships across sites, learn from our colleagues and inspire our work.



Olympic Coast AmeriCorps educators dive into plankton with Forks Elementary

Olympic Coast National Marine Sanctuary (OCNMS) education team AmeriCorps brought plankton education to all sixth-grade students in Forks, Washington. Bringing plankton tows from Hollywood Beach pier in Port Angeles as well as microscopes for an in-depth plankton exploration, students were awed by the sheer amount of life revealed with a closer look. Students rotated between compound microscopes, dissecting microscopes, and a draw-your-own plankton activity, with 90 students participating in the program.

Olympic Coast National Marine Sanctuary attends Grays Harbor Shorebird Festival

Olympic Coast National Marine Sanctuary education team AmeriCorps service members attended the Shorebird Festival in Grays Harbor as an education exhibitor. The OCNMS booth focused on albatross and the impact that marine debris has on these amazing birds. Visitors had the opportunity to learn more about albatross, investigate a bolus, brainstorm stewardship actions, and try their hand at drawing an albatross! OCNMS education team interacted with at least 50 visitors over the weekend at this event.



NatureBridge hosts sanctuary educators to introduce marine food webs to elementary school from Oregon

Olympic Coast National Marine Sanctuary education team AmeriCorps ran an evening program at Nature Bridge Olympic about marine food webs and organism interactions within the sanctuary for 70 students. Sixth graders from Oregon Episcopal School in Portland Oregon watched the *Discover the Olympic Coast* video by Florian Graner followed by a food web extension activity. Students were broken into two groups that highlighted the many interactions between organisms in the ocean. The program culminated with a student brainstorm of ideas on how to maintain healthy oceans and watersheds.

Olympic Coast students apply underwater technology to real-world problems at 3rd annual MATE competition



On Saturday May 18, 2019 Olympic Coast National Marine Sanctuary (OCNMS) collaborated with Marine Advanced Technology and Education (MATE) organization to host their third annual MATE Olympic Coast Remotely Operated Vehicle (ROV) Competition. Thirteen student teams, comprised of 56 students from schools throughout Olympic Peninsula, participated in the underwater robot competition held at Forks Athletic and Aquatic Club in Forks, Washington. Competition themes and missions change each year, with this year focusing on the role of ROVs in inland waterways including maritime history, public safety, and maintaining healthy waterways. Student teams were required to pass safety inspections, deliver an oral presentation on their engineering design as well as provide a marketing display to entice potential partners or clients. Students also completed product demonstration missions in the pool, which emulated real-world situations where ROVs complete the work. Awards were given to the top performers in both Scout and Navigator competition levels, as well as discretionary awards given by the judges for exceptional achievements.

Sanctuary educators introduce Ocean Literacy to 8th Graders at NatureBridge Olympic

Olympic Coast National Marine Sanctuary education team AmeriCorps ran an evening program at

Nature Bridge about the seven ocean literacy principles. Around 28 eighth grade students from Spokane came to NatureBridge in the Olympic National Park. The program focused on learning the seven principles of Ocean Literacy. The program consisted of a PowerPoint presentation and a fun twist on Jeopardy. After the presentation, students broke up into four teams and played an Ocean Literacy focused Jeopardy game. The game challenged students to think quickly while also gaining points.

Olympic National Park Coastal Interpretive Rangers get into their sanctuary

Olympic Coast National Marine Sanctuary (OCNMS) education staff met with the 2019 Olympic National Park (ONP) coastal Interpretive Rangers at Kalaloch Ranger Station as part of the new staff orientation to Olympic Coast. The rangers will be interacting with the three million plus visitors to Olympic National Park and Olympic Coast National Marine Sanctuary along the 70 miles of shared federally protected coastline. ONP rangers were given an overview of OCNMS including our history, our mission, and key talking points around stewardship and conservation, as well as ocean acidification, marine debris, and climate change. The training wrapped up at Ruby Beach where the group practiced tidepool interpretation and beach etiquette, while enjoying the beauty and inspiration of our sanctuary waters.



Docent trainees visit Olympic Coast National Marine Sanctuary

New 2019 docent trainees and returning volunteers completed the five-week classroom instruction in preparation for staffing the Olympic Coast Discovery Center in Port Angeles. Classes included presentations from Olympic Coast National Marine Sanctuary (OCNMS) staff, Feiro naturalists, and Olympic National Park guest speakers. Participants learned about OCNMS, the National Marine Sanctuary System, current research, interacting with visitors, and collaborations with partners as part of their curriculum. The training culminated with two field trips. The first event included a visit to local tidepools at Salt Creek Recreation Area and a volunteer appreciation barbecue. On the second occasion docents visited the Makah Museum and Cape Flattery. The in-depth tour of the museum, led by Makah Tribal member June Williams, provided insight into and appreciation of the ancient and contemporary Makah culture. Docents also enjoyed a hike to Cape Flattery to take a firsthand look at the northern end of OCNMS and be greeted by a variety of seabirds and marine mammals while enjoying a sanctuary vista.



Olympic Coast Discovery Center is open for the season

Olympic Coast Discovery Center is open daily from 10:00 am - 5:00 pm from Memorial Day through Labor Day, and weekends only 10:00 am - 5:00 pm in September through mid-October. The center opened for the season on Saturday May 25.

Students from Olympia, Washington “Discover the Olympic Coast”

Olympic Coast National Marine Sanctuary AmeriCorps education team shared *Discover the Olympic*

Coast, a movie by Florian Graner with 60 students ranging from sixth to eighth grade at the Olympic NatureBridge campus. The movie allows students to explore the sub-tidal habitats within Olympic Coast National Marine Sanctuary through the eyes of a harbor seal. After the movie the group debriefed and talked about predator-prey interaction they saw as well as habitats and adaptations they noticed. To end the evening program, students discussed ideas they had to help keep the marine environment safe and healthy for ocean organisms.

Olympic Coast National Marine Sanctuary provides outreach at 2nd Annual Port Angeles Maritime Festival

Olympic Coast National Marine Sanctuary provided an educational booth at the 2nd Annual Port Angeles Maritime Festival. Visitors to the sanctuary's booth enjoyed hands-on crafts highlighting biodiversity of life in the sanctuary. During the event, families also enjoyed a kid's scavenger hunt, boat tours, free vessel safety checks, tours of the Waterfront Terminal, and exhibits and demos at the Port Angeles Yacht Club.

Olympic Coast educators urge Port Angeles community members to REthink!

The Olympic Coast National Marine Sanctuary (OCNMS) education team AmeriCorps members helped host the second annual REthink Fair in Port Angeles, Washington. The event is focused on inspiring and educating the local community on the impacts that plastic pollution and single use items have on our environment with an eye toward how we can make simple changes to limit our impact.

OCNMS's booth focused on albatross and the impact that plastic pollution has on these incredible

seabirds. Partners from Clallam County, Olympic National Park, Washington CoastSavers, and Surfrider Foundation also had booths to help engage and inspire community members as well as some independent booths. About 95 people visited the fair, and multiple art submissions were included in this year's recycled art competition. Community members voted for their favorite art piece. The winning reused debris submissions were a mural of the Port Angeles landscape by a class from Franklin Elementary School, and a bottle cap octopus named "Oscar."



Taholah School and research vessel *Falkor* talk space rocks



On June 6, Schmidt Ocean Institute's research vessel (R/V) *Falkor* connected with Taholah School for a ship to shore outreach event discussing meteorites, remotely operated vehicles (ROV), and ocean exploration. Forty-five students and two teachers from Taholah School on Quinault Indian Nation participated in the telecommunications opportunity to talk directly with the NASA Space Dust Curator and the ROV pilot aboard R/V *Falkor*. Students were able to ask questions about the challenges of seeking space rocks in the ocean, the tools necessary to be successful in finding meteorites, and how one becomes a space dust curator or ROV pilot. R/V *Falkor* is completing their 72-hour mission of

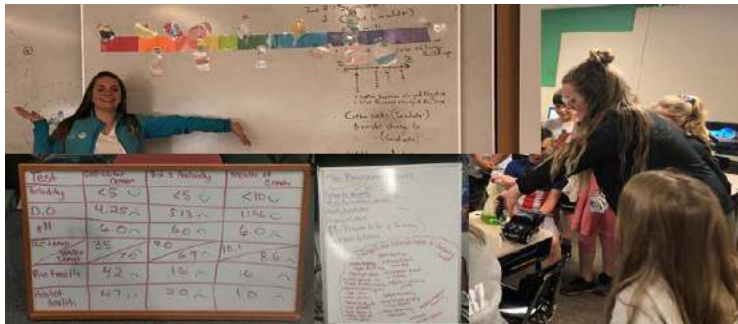
searching for the meteorite that landed in the Pacific Ocean in March 2018 off the coast of Quinault Indian Nation and in Olympic Coast National Marine Sanctuary. If successful in finding a piece of the

meteorite, the Quinault Indian Nation will name the recovered bolide.

Incorporating science and policy in Olympic Coast National Marine Sanctuary

Superintendent Carol Bernthal gave a presentation on how the National Marine Sanctuary System uses science in the management of national marine sanctuaries to a Peninsula College science seminar group, using examples from Olympic Coast National Marine Sanctuary.

Olympic Coast supports NOW Science meaningful watershed educational experiences



The NOW (North Olympic Watershed) Science Program came to a seasonal end in June. Through the program, 395 students became familiar with the meaning of a watershed, investigated a local watershed within Port Angeles city limits through hands on outdoor science, identified potential impacts to water quality within the community, and learned about the impacts related to the end of the watershed. An

addition to the program this year was a third contact with students for a classroom lesson about ocean acidification provided by Olympic Coast National Marine Sanctuary (OCNMS) AmeriCorps education team. The team continued to support the pre-visit lesson and watershed walk field trip. The main focus of the program was salmon health and students explored the question “What would it take for salmon to thrive in Peabody Creek?” This year, the NOW partner program between OCNMS, Feiro Marine Life Center, and Olympic National Park reached 19 fourth grade classes from seven schools in Sequim, Port Angeles, and Crescent school districts from the beginning of March to mid-June.

NatureBridge hosts sanctuary educators to introduce careers to visiting 10th graders

Olympic Coast National Marine Sanctuary AmeriCorps education team conducted an evening program at NatureBridge about careers and team members within the sanctuary. Nineteen tenth graders from around the United States learned about the careers and members that make up our sanctuary office. The students were part of a Nature Leadership Program that visited NatureBridge in Olympic National Park. In this program, students listened to an overview of each career and team member, then played the Olympic Coast National Marine Sanctuary Ocean Careers Game. Working in groups, each team had to pick a research cruise to embark on while trying to reach everyone’s personal objective. Students learned the inner workings of a research cruise and how to work together in teams.

Sanctuary provides hands-on experiential Ocean Science program for more than 400 Olympic Coast students

Olympic Coast National Marine Sanctuary (OCNMS) conducted another successful year of Ocean Science education with Washington coastal schools. With seven schools and 14 teachers, Ocean Science Program provided hands-on experiential learning opportunities to 416 students and 60 parent chaperones along Washington’s coast. The Ocean Science program kicked off with Neah Bay Elementary School Beach Day. Once spring tides were accommodating, participating schools enjoyed a field trip to their local beach for intertidal monitoring and exploration, or sandy beach exploration activities, followed by a classroom visit focusing on marine food webs and ocean acidification. Students



conducted beach cleanups as they left their beach investigation while considering the actions we can take personally and at community levels to encourage a healthy ocean. Student groups were provided with waterproof cameras to photo-document their field investigations and marine debris collections. Participating schools included Clallam Bay, Neah Bay, Quileute Tribal School, Queets-Clearwater, Lake Quinault, Pacific Beach, and Simpson elementary schools. Ocean Science is designed to integrate NOAA Ocean Literacy concepts and principles into western Washington formal and informal educational programs. Ocean Science is led by Olympic Coast National Marine Sanctuary, and supported by Seattle Aquarium and Quinault Indian Nation.

Students investigate plastic pollution

Olympic Coast National Marine Sanctuary AmeriCorps educators helped nine students from the Swan School in Port Townsend learn about the effects of marine debris and plastic pollution. Students met the AmeriCorps educators at NatureBridge for an evening program focused on albatross. Students learned many details about albatross from where live to how they dance. Students then got to do hands-on investigation by dissecting albatross boluses. Students ended with a discussion on plastic pollution and solutions to limit our plastic use.

Olympic Coast National Marine Sanctuary presents Ocean Acidification 101 with Port Angeles Yacht Club

While celebrating the summer solstice, Olympic Coast National Marine Sanctuary's Community Engagement Specialist Chris Butler-Minor provided an introduction to ocean acidification to 30 members of the Port Angeles Yacht Club. This invitational event provided an opportunity to share information on the issue, the research that is being pursued, and ideas for personal actions that can reduce carbon footprints.

CONSERVE NATURAL RESOURCES IN THE SANCTUARY

Washington Coast Cleanup Earth Day event successfully removes debris from Olympic Coast

Sunny skies welcomed over 1000 volunteers to the beach in an effort to remove marine debris from Washington's coast! Volunteers were able to remove tons of marine debris (with final numbers still being tallied) off of 65 beaches from the Strait of Juan de Fuca and down the Washington coast from Cape Flattery to the Columbia River. All volunteers returned safely, avoiding injury through physical work, hauling hundreds of bags of garbage, boat parts, floats, rope, and plastic off our shorelines. Olympic Coast National Marine Sanctuary staff organized volunteers at their regular registration station on the Makah Tribe's Hobuck Beach, in Neah Bay. The sanctuary is a founding member of Washington CoastSavers, and contributes significantly to the organization's long-range planning, funding, and event coordination.

Olympic Coast welcomes Hollings Scholar

Olympic Coast National Marine Sanctuary (OCNMS) welcomes Hollings Scholar Clara Smith. Clara is a rising senior at the University of Hawai'i at Hilo. She is majoring in marine science and pursuing certificates in data science and the marine option program. In her time at university, Clara has had opportunities to research sources of pollution and possible remediation strategies in the coastal ecosystems of the islands of Hawai'i and Puerto Rico. This summer, Clara will be working with OCNMS Marine Debris Coordinator, Chris Butler-Minor, to investigate the distribution of marine debris in the sanctuary. The research will focus on identifying spatial and temporal trends in debris accumulation using data collected from a citizen science program. The results will be used to generate outreach products that will aid in including local communities in the conservation of the sanctuary.



Olympic Coast participated in first northwest recreational fishing roundtable

Olympic Coast National Marine Sanctuary community engagement specialist attended the first Recreational Fishing Roundtable in Seattle at the Northwest Fisheries Science Center (NWFSC). The event was hosted by National Marine Fisheries Service (NMFS) West Coast Recreational Fishing representative, Daniel Studt. Staff from NMFS and NWFSC as well as members from Pacific Fisheries Management Council, Puget Sound Anglers, and Puget Sound Anglers North Olympic Peninsula Chapter were among the attendees. There were discussions on seal and sea lion predation, hatchery production, and influences on wild strain genetics due to 19th and 20th century stream transfers from hatcheries. Daniel is slated for a presentation on the March Recreational fishing Memorandum of Agreement (MOA) to the Sanctuary's Advisory Council.

SANCTUARY PERMITTING

Issued Permits and Authorizations

MULTI-2017-004-A1 – Dr. Aimee Keller, NOAA Northwest Fisheries Science Center

Project Title: Northwest Fisheries Science Center's West Coast Groundfish Bottom Trawl Survey

Permitted Activity: Seafloor disturbance to conduct annual stock assessment trawl surveys of groundfish resources of the West Coast on the continental shelf and upper slope (30 - 700 fm); providing a measure of change in abundance, distribution, and condition of these stocks in all five of the west coast region national marine sanctuaries.

Project Location: The project is from Cape Flattery, Washington to the U.S./Mexico border, the permit is for work in sanctuaries.

Permit Duration: From April 30, 2019 through April 30, 2023

Comment: The survey is comprised of two passes down the coast using one or two vessels in a stratified-random sampling design. Data collected during the survey are used in stock assessments to improve the information available for managing west coast groundfish. Assessments based on these data are used by the Pacific Fisheries Management Council to establish appropriate fishing quotas and implement sustainable management plans.

MULTI-2019-008 - Sandy Parker-Stetter - NOAA Northwest Fisheries Science Center

Project Title: Integrated Ecosystem and Pacific Hake Acoustic-Trawl Summer and Winter Surveys; Investigations of hake ecology, survey methods, and the California Current ecosystem

Permitted Activity: Alteration of the submerged lands of the sanctuaries incidental to conducting

biennial integrated acoustic and trawl (IAT) surveys to assess the abundance, distribution, and biology of Pacific hake (*Merluccius productus*), except as specified in the Special Terms and Conditions of this permit and in Attachment 1.

Project Location: Within OCNMS, GFNMS, CBNMS, MBNMS, and CINMS, except as listed under the Special Terms and Conditions and in Attachment 1, Integrated Ecosystem and Pacific Hake Trawl Avoidance Areas within the West Coast National Marine Sanctuaries

Permit Duration: May 28, 2019 through January 9, 2022

Comment: Scientists from the Northwest Fisheries Science Center (NWFSC) and the Department of Fisheries and Oceans Canada (DFO) jointly conduct biennial integrated acoustic and trawl (IAT) surveys to assess the abundance, distribution, and biology of Pacific hake (*Merluccius productus*). Age-specific estimates of total population abundance derived from the surveys are a key data source for joint U.S.-Canada Pacific hake stock assessments; they ultimately act as the foundation for advice on U.S., tribal, and international harvest levels.

MULTI-2019-005 - Annette E Henry - NOAA Fisheries Southwest Fisheries Science Center

Project Title: Marine mammal and sea turtle assessment research in the marine sanctuaries, involving low-altitude overflights, biopsy sampling, drifting acoustic spar buoy recorders (DASBR) passive acoustic monitoring, and deployments of expendable bathythermographs (XBTs) from vessels.

Permitted Activity: Low overflight at no less than 600 feet above sea level (ASL) by manned aircraft within NOAA regulated overflight zones (does not include OCNMS). Discharging into the sanctuaries up to 10 satellite-linked tags per year, up to 65 suction cup tags with a video camera, VHF and/or time-depth recorders per year, and up to 20 acoustic tags per year and abandoning tags that are not retrievable into the sanctuaries to collect in-situ information about leatherback sea turtles. Discharge and recovery of up to ten (10) Drifting Acoustic Spar Buoy Recorders (DASBRs) per sanctuary for up to sixty (60) days each for up to ten (10) times per year to conduct passive acoustic monitoring of cetaceans throughout the California Current ecosystem. Discharge of approximately thirty (30) expendable Bathythermographs (XBTs) per year for each survey.

Project Location: Within CINMS, MBNMS, GFNMS, CBNMS, and OCNMS as stipulated above in the Permitted Activities and below in Special Terms and Conditions.

Permit Duration: June 4, 2019 through April 30, 2019

Comment: The objective of the proposed studies is to provide the data required for assessment, management, and recovery of marine mammals and sea turtles along the U.S. West Coast and within Channel Islands, Monterey Bay, Greater Farallones, Cordell Bank, and Olympic Coast national marine sanctuaries.

OCNMS-2018-005-A1 – Gregg R. Dietzman

Project Title: Marine microbial diversity survey

Permitted Activity: Collection of up to 333 samples are authorized: 9 samples of 10 grams each, at each of the 37 permitted sites.

Project Location: Specific station locations are identified in the permit.

Permit Duration: July 10, 2019 through June 30, 2021

Comment: Permit amendment to change contact information and for additional stations.

OCNMS-2019-003 – Dr. Joseph Smith, NOAA Northwest Fisheries Science Center

Project Title: Salmon Ocean Behavior and Distribution (SOBaD)

Permitted Activity: The proposed deployment of a network of stationary acoustic receivers (original proposal was for 158 moorings, but permit will likely be for a smaller number based on ongoing consultations). Tagging of fish using 300 acoustic tags. Deployment of an autonomous underwater vehicle (Slocum Glider) that is integrated with two acoustic receivers

Project Location: Proposed 5 km grid pattern starting 1.5 km from shore along the coast of Washington within the Olympic Coast National Marine Sanctuary (subject to ongoing discussions).

Permit Duration: Originally requested from April 19, 2019 through March 1, 2021

Comment: This project plans to identify the ocean distribution of salmonids using pop-up satellite tags (PSTs) and acoustic tag technologies. Our current understanding of the distribution of salmonids in the ocean is based on where and when we choose to sample. For this project, the applicant plans to use telemetry, making it possible to obtain fishery independent insights into individual behavior. A subset of tags will archive environmental data including the temperature, depth, and light intensity that the fish experiences allowing for the use of state space models to reconstruct the path and travel rate of fish. Improved understanding of listed species distributions, such as salmonids, will benefit efforts to conserve both salmonids and Southern Resident Killer Whales (SRKW) that prey on salmonids. The spatial and temporal overlap of SRKW and salmon affects the distribution and effort expended by foraging SRKW, thus affecting salmon survival.

OCNMS-2019-004 - Eric King - Schmidt Ocean Institute

Project Title: Seeking Space Rocks in Olympic Coast National Marine Sanctuary

Permitted Activity: Collection of meteorites. Alteration of the seabed from touchdown and operations of one remotely operated vehicle (ROV).

Project Location: Various locations west of the Quinault Canyon.

Permit Duration: May 29, 2019 through June 8, 2019

Comment: On March 7, 2018 at ~20:00 local time, a meteorite landed off the coast of Washington state in Olympic Coast National Marine Sanctuary. The meteorite broke up as it entered earth's atmosphere and fragments rained into the ocean in a discrete area located near the rim of Quinault Canyon in the southern portion of Olympic Coast National Marine Sanctuary. The science team is attempting to recover meteorite fragments. Samples will be sorted on board by meteorite experts, and potential meteorite fragments will be packaged and transported to laboratory facilities by NASA staff for further evaluation and analysis.

OCNMS-2019-005 - Zoltan B. Szuts - Applied Physics Lab, University of Washington

Project Title: A Multi-Platform, High-Resolution Coastal Ocean Observing Sensor Array for Researching Washington Coastal Waters and Ecosystem Response to Climate Change

Permitted Activity: Disturbance of the seafloor from the deployment, operation, and retrieval of oceanographic moorings. Potential discharge of a small quantity of chemicals that serve as an antifoulant to one of the sensors deployed.

Project Location: The moorings are located roughly 13 nm west-northwest of La Push in 100 m of water

Permit Duration: May 1, 2019 through May 1, 2024

Comment: The Applied Physics Laboratory of the University of Washington (APL-UW) and the Northwest Association of Networked Ocean Observing Systems (NANOOS) real-time mooring system is collectively referred to as NEMO (Northwest Enhanced Moored Observatory). This real-time mooring system is a novel integration of various sampling platforms to achieve unprecedented observations. The primary mooring is a heavily-instrumented 3500-lb surface mooring (Cha Ba or Quileute for "whale tail") which samples both meteorology (winds, air temperature, rainfall) in addition to ocean properties (salinity, temperature, oxygen, nitrate, chlorophyll, pH, currents, etc.) at various depths. Cha Ba is also instrumented with a pCO₂ system to help us better understand changes of CO₂ in the ocean and atmosphere.

OCNMS-2019-006 - Blair Delean – NOAA Marine Mammal Laboratory

Project Title: Aerial surveys of Olympic National Marine Sanctuary Steller sea lion sites with an unmanned aircraft

Permitted Activity: Low altitude overflights with a unmanned aerial system (APH-22).

Project Location: Carroll Island and Sea Lion Rocks.

Permit Duration: July 6, 2019 through July 20, 2019

Comment: A small multi-rotor unmanned aircraft will be launched from a small vessel and used to obtain aerial imagery of a recently established Steller sea lion (Eastern U.S. stock) rookery complex at Carroll Island and Sea Lion Rock where 133 pups were born in 2017 and 176 pups in 2018. Imagery will be used to determine the number of pups and non-pups present at each site and used to calculate abundance and trends. Images will also be analyzed for branded animals.

Pending Permits

OCNMS-2019-007 – John Mickett, University of Washington Applied Physics Laboratory

Project Title: Deployment of a Subsurface, Near Real-time, HAB-detection mooring at the UW-NANOOS Mooring Site

Permitted Activity: Deployment of a mooring for four consecutive spring-to-fall periods starting in the spring of 2021, with the mooring positioned at the UW-APL/NANOOS mooring site.

Project Location: 13 miles WNW of La Push

Permit Duration: Requested from January 1, 2020 through December 31, 2025

Comment: Observations from this mooring will be displayed in near-real time on the NANOOS Real-time HABs website: <http://www.nanoos.org/products/habs/real-time/home.php>. Additionally, email notifications will be sent for any toxin levels detected above a set threshold.

LEARN ABOUT YOUR SANCTUARY / NATURAL HISTORY

Planning begins for the Washington Maritime National Heritage Area (WMNHA)

<http://www.preservewa.org/programs/national-maritime-heritage-area/>

Olympic Coast National Marine Sanctuary staff attended a meeting of the Pacific Northwest Maritime Heritage Council. The main topic of the meeting was the newly designated Washington Maritime National Heritage Area (WMNHA). The Natural Resources Management Act, a bipartisan public-lands bill that passed on February 12, is the largest public-lands protection bill since 2009. Among its many provisions was the addition of six national heritage areas. National Heritage Areas (NHA) are places where historic, cultural, and natural resources combine to form cohesive, nationally important landscapes. Unlike national parks, National Heritage Areas can be large lived-in landscapes and do not include any regulations. The WMNHA, one of 55 NHAs, is the first and only “Maritime” NHA in the system. This new NHA includes Washington’s saltwater coastline from Grays Harbor County to the Canadian border. The Washington Trust for Historic Preservations has been designated as the lead entity and is tasked with drafting a management plan for the WMNHA. They will collaborate with communities to determine how to make heritage relevant to local interests and needs.

REGIONAL / NATIONAL MARINE SANCTUARY SYSTEM NEWS

New national marine sanctuary designation in Mallows Bay-Potomac River of Maryland

<https://www.noaa.gov/media-release/noaa-designates-new-national-marine-sanctuary-in-maryland>

NOAA, the state of Maryland, and Charles County today announced the designation of a new national marine sanctuary to protect the remains of more than 100 abandoned steamships and vessels built as part of America’s engagement in World War I. Mallows Bay-Potomac River National Marine Sanctuary, about 40 miles south of Washington, D.C., is the first national marine sanctuary designated since 2000.

New NOAA Mitigation Policy

Staff from the Policy and Planning Division and Greater Farallones National Marine Sanctuary attended a workshop on the new NOAA Mitigation Policy developed by the Office of Habitat Conservation at NMFS. The NOAA Mitigation Policy outlines principles for the use of mitigation as a component of NOAA's work in conserving and managing coastal, riverine, and marine resources. Other attendees were from the Restoration Center, Protected Resources, and Habitat Conservation divisions from all regions of NMFS and HQ. The objectives of the workshop were to: design a training program on this new policy, explore the need for additional support for staff to successfully implement mitigation projects, and become more familiar with Habitat Equivalency Analysis tools and multipurpose mitigation banks for conservation goals (e.g., ESA Section 7 consultations) and restoration projects (e.g., NRDA cases). The new NOAA policy will be released for public comment as a NOAA Administrative Order later this summer.

NOAA Ocean Guardian School Receives Environmental Stewardship Award

https://sanctuaries.noaa.gov/education/ocean_guardian/

NOAA's Office of National Marine Sanctuaries Ocean Guardian Program encourages schools to make a commitment to the protection of local watersheds, the world's ocean, and national marine sanctuaries through a conservation project. A NOAA Ocean Guardian School, Kellogg Elementary School in Goleta, California, has received a prestigious award for their efforts. Awarded by the nonprofit Explore Ecology, the Environmental Stewardship Award recognizes teachers and students who promote environmental stewardship through education and action and who initiate positive change in their community. Kellogg School's students have been working hard to reduce single use plastic and styrofoam waste on their school campus and in their community, and educate others on the harmful effects of plastic and styrofoam on ocean ecosystems. They have conducted a school lunch waste audit and started Kellogg's first Zero Waste Lunch Day, coordinated campus litter clean-ups, and hope to fund reusable party kits for all Kellogg classrooms.

National Marine Manufacturers Association staff visits Stellwagen Bank National Marine Sanctuary

The communications director, government relations, and director of association marketing from the National Marine Manufacturers Association (NMMA) visited Stellwagen Bank National Marine Sanctuary to begin a video project regarding responsible recreation in national marine sanctuaries. The team filmed facilities and a recreational boating and fishing trip in the sanctuary, and interviewed staff members. Their goal is to produce two videos: one for consumers featuring the "boatability" of sanctuaries with conservation messages woven in; and a second piece for NMMA to use for advocacy highlighting sanctuaries' infrastructure needs. NMMA believes that infrastructure is key in introducing more of the public to sanctuaries and promoting sustainable, responsible enjoyment of these resources, and they are committed to garnering support for sanctuaries.

Thunder Bay NMS working with industry stakeholders

Thunder Bay National Marine Sanctuary met with stakeholders from the commercial shipping industry to discuss the locations of moorings within the national marine sanctuary. Currently, these seasonal moorings make shipwreck dive sites easier to locate and provide a safe means of descent and ascent for divers. Moorings are also used to reduce anchor damage to the fragile, historic shipwrecks located within the sanctuary. Later this summer, the parties will reconvene, and include other stakeholder interests to assess options for compatible use.

Florida panel on coral disease highlights partnerships, response efforts

<https://floridakeys.noaa.gov/coral-disease/>

Stony Coral Tissue Loss Disease along the Florida Reef Tract has been closely monitored due to its large geographic range, extended duration, high mortality rates, and the number of species affected. This disease has now been observed and reported in several other Caribbean locations. NOAA, alongside partners from universities, nonprofits, and Florida state agencies, have led unprecedented response efforts to the disease outbreak. A recent panel, including Florida Keys National Marine Sanctuary staff, provided an update on the multi-agency response to the disease event along the Florida Reef Tract. Response strategies include coral restoration, volunteer training, monitoring, and coral rescue, which requires moving segments of wild coral colonies from non-disease areas to aquaria, to preserve genetic diversity and support coral propagation.

Inaugural Fautasi Heritage Symposium in American Samoa honors the traditions of Pacific Island communities

<https://americansamoa.noaa.gov/welcome.html>

National Marine Sanctuary of American Samoa co-hosted the inaugural Fautasi Heritage Symposium alongside the American Samoa Historic Preservation Office. The symposium highlighted the significance of fautasi, an American Samoan watercraft that holds great cultural importance. Once used for transportation between islands, the large vessels are now primarily used in racing events. Reaching 100 feet in length and accommodating 50-person rowing crews, fautasi provides a connection with American Samoan traditions and creates healthy pathways for community engagement. As part of a cross-Pacific cultural exchange, staff from Papahānaumokuākea Marine National Monument participated to share aspects of Hawaiian canoe heritage and traditions and how it empowers Pacific Island communities.

Ocean acidification buoy deployed in National Marine Sanctuary of American Samoa

NOAA and partners have launched a new buoy in Fagatele Bay within NOAA's National Marine Sanctuary of American Samoa to measure the amount of carbon dioxide in the water and track ocean acidification over time. Through an array of moored carbon dioxide buoys near our nation's coral reefs, NOAA is working to improve our understanding of the impacts of ocean acidification on reefs and the species that depend on them. A team of scientists also conduct long-term monitoring of the surrounding coral reef ecosystem and bi-monthly sampling of seawater adjacent to the buoy.

Gray whale unusual mortality event along West Coast

Gray whales travel through Channel Islands, Monterey Bay, Greater Farallones, Cordell Bank, and Olympic Coast national marine sanctuaries during their annual migration between Arctic feeding grounds to warm calving lagoons in Mexico. NOAA's National Marine Fisheries Service has declared an Unusual Mortality Event (UME) concerning the elevated die-off of gray whales along their migration route on the West Coast of North America. UME is defined as a stranding event that is unexpected, involves significant die-off of a marine mammal population, and demands immediate response to determine the cause. Since January, 152 dead gray whales have been found in the U.S., Canada, and Mexico. Preliminary findings in many whales show evidence of emaciation, while additional necropsies show vessel strikes in three whales and entanglement in one whale. Greater Farallones National Marine Sanctuary is assisting with outreach concerning strandings in the San Francisco Bay Area.

NOAA holds Lake Ontario public scoping meetings

<https://sanctuaries.noaa.gov/lake-ontario/>

As part of the sanctuary designation process, NOAA held four public scoping meetings on the proposed Lake Ontario National Marine Sanctuary. Held in the four counties that submitted the nomination

(Wayne, Cayuga, Oswego, and Jefferson), a total of 164 people attended, with 30 people providing oral comments. The comments were overwhelmingly positive, with the public expressing support for what a national marine sanctuary could mean to central upstate New York. NOAA staff also met with local officials, divers and dive shop owners, and the Oswego Port Authority to discuss the proposed sanctuary. NOAA announced its intent to designate the new national marine sanctuary in April and asked the public for input on potential boundaries, resources that could be protected, issues NOAA should consider, and any information that should be included in the resource analysis. The public is invited to weigh in on the proposal through July 31, 2019.

REGIONAL / NATIONAL MARINE SANCTUARY FOUNDATION NEWS

Community partners celebrate designation of Mallow's Bay-Potomac River National Marine Sanctuary

<https://marinesanctuary.org/news/community-partners-celebrate-designation-of-mallows-bay-potomac-river-national-marine-sanctuary/>

Local community partners, national conservation and preservation groups, and recreation and education advocates celebrated the designation of a new national marine sanctuary at Mallow's Bay in the Potomac River. The sanctuary will take effect by the end of 2019 and will be the first designated in 19 years.

Florida Keys Chapter of National Marine Sanctuary Foundation names leadership

<https://marinesanctuary.org/news/florida-keys-chapter-of-national-marine-sanctuary-foundation-names-leadership/>

The National Marine Sanctuary Foundation welcomes Lad Akins as director and Sara Rankin as development officer of its newly-established Florida Keys chapter. Akins, a longtime advocate for Florida Keys waters, was the founding executive director of the Reef Environmental Education Foundation (REEF) and is currently the CEO of Blue Earth Conservation. Rankin brings a wealth of experience in nonprofit management and development in Florida and nationally with organizations including Autism Speaks, the United Way, and the American Lung Association.

How you can help prevent marine debris

<https://marinesanctuary.org/blog/how-you-can-help-prevent-marine-debris/>

When you drink coffee from a styrofoam cup or sip your favorite soda through a plastic straw, you might not be thinking of where these products end up after you're done using them. Unfortunately, many of the disposable items we use in our daily lives find their way to the ocean and become marine debris. Participating in beach cleanups helps keep our beaches in good condition so everyone can enjoy them. Organized events, such as the annual [Washington CoastSavers cleanups](#) that take place in and around Olympic Coast National Marine Sanctuary, are great ways to get involved.

Hollings Award grantee Keith Ellenbogen brings his underwater images to Capitol Hill

<https://marinesanctuary.org/blog/hollings-award-grantee-keith-ellenbogen-brings-his-underwater-images-to-capitol-hill/>

Keith Ellenbogen, an acclaimed underwater photographer, is a multi-year Ernest F. Hollings Ocean Awareness Award grantee, selected by the National Marine Sanctuary Foundation to capture dramatic images about the extraordinary diversity of marine life within Stellwagen Bank National Marine Sanctuary. Keith was invited to present images and stories with congressional leaders to raise ocean awareness about local marine life during Capitol Hill Ocean Week (CHOW), which took place June 4-6, 2019. Learn more about his project at <https://space2sea.mit.edu/>.

OCNMS Online

Visit our website at: <http://olympiccoast.noaa.gov/>.

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Ocean-Related Websites

National Oceanic and Atmospheric Administration http://www.noaa.gov/	National Data Buoy Center http://www.ndbc.noaa.gov/rmd.shtml	Washington’s Ocean Resources http://www.ecy.wa.gov/programs/sea/ocean/index.html
National Ocean Service http://oceanservice.noaa.gov/	NOAA Pacific Marine Environmental Laboratory http://www.pmel.noaa.gov/	Northwest Association of Networked Ocean Observing Systems http://www.nanoos.org/
Office of National Marine Sanctuaries http://sanctuaries.noaa.gov/	CoastWatch – West Coast Regional Node http://coastwatch.pfel.noaa.gov/	NOAA Online Media Library http://sanctuaries.noaa.gov/photos
NOAA Ocean Explorer http://oceanexplorer.noaa.gov/	NOAA Marine Debris Program http://marinedebris.noaa.gov/	Encyclopedia of National Marine Sanctuaries http://www8.nos.noaa.gov/onms/park/

OLYMPIC COAST NATIONAL MARINE SANCTUARY

OCNMS STAFF

LEARN MORE ABOUT YOUR SANCTUARY

The Sanctuary Office Report is produced bi-monthly by Olympic Coast National Marine Sanctuary in conjunction with sanctuary advisory council meetings. To learn more about the sanctuary, please visit our website at:

<http://olympiccoast.noaa.gov/>.

To learn more about the sanctuary advisory council, please visit:

http://olympiccoast.noaa.gov/involved/sac/sac_welcome.html.

OFFICE OF NATIONAL MARINE SANCTUARIES (ONMS)

Olympic Coast National Marine Sanctuary is one of the marine protected areas in the National Marine Sanctuary System encompassing more than 600,000 square miles of marine and Great Lakes waters from Washington State to the Florida Keys and from Lake Huron to American Samoa. The system includes 13 national marine sanctuaries and Papahānaumokuākea and Rose Atoll marine national monuments. Visit the ONMS website at:

<http://sanctuaries.noaa.gov/>.

Get Involved!

To learn how to get involved in the sanctuary visit:

<http://olympiccoast.noaa.gov/involved/welcome.html>.

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